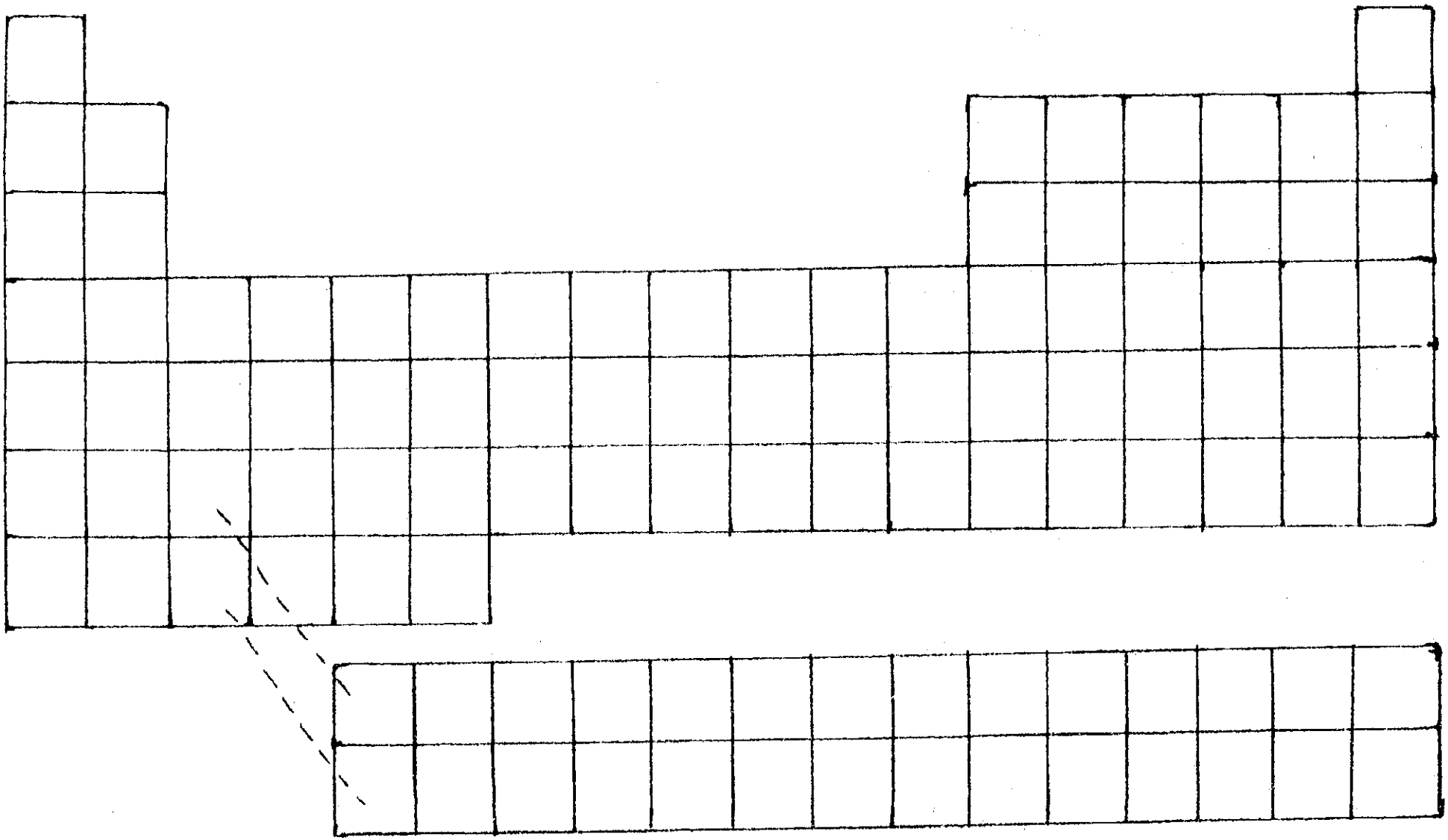
PERIODIC TABLE



Name
Date
Period

Film Questions

The Diamond Deception

1) How old are some diamonds?

2) What element make up diamonds?

3) When was the chemical composition of diamonds discovered?

4) What is done in order to burn diamonds?

5) Explain the difference between graphite and diamonds?

6) Why were diamonds needed during WWI ?

7) Where do many diamonds come from?

8) What company attempted the first diamond production?

9) Is it possible to change graphite into diamonds?

10) What company controls the world diamond trade?

11) How does this company keep the prices of diamonds high?

12) How are diamonds cut?

13) What was Louie XIV's favorite gem?

14) Why do you think that guy is working with no shirt on?

15) Why does DeBeers want to know how to make synthetic diamonds?

16) What color are most synthetic diamonds?

17) Why are they this color?

18) How do scientist rid the diamonds of these impurities?

Periodic Table Characteristics

Hydrogen - H
- diatomic gas (H_2)
- colorless, odorless
- very light
- used in the Hindenburg disaster
later used He - light and unreactive

Group IA - alkali metals
- sodium family.

Li, Na, K, Rb, Cs, Fr.
- light metals
- shinny metals
- very soft. So soft you can cut them with a knife
- reacts violently with air and H_2O

Li, Na, K, Rb, Cs, Fr
less reactive ⟵⟶ most reactive

Ex: Drano.

$2Na + 2H_2O \rightarrow 2NaOH + H_2$ unclogs sinks.
alkali (strong base)

Group IIA - alkaline earth metals
- calcium family

Be, Mg, Ca, Sr, Ba, Ra
- light metals
- soft metals but not as soft as Group IA.
- reacts with air and H_2O but not as violently as Group IA.

Mg - burns with a bright light (MgO).
- used as a filament in flashbulbs in cameras
- used to make light structures ex: bicycles

$Mg(OH_2) + H_2O \rightarrow$ milk of magnesia.

Ca - found in bones and teeth
$CaCO_3$ - stalactites

Ra - radioactive element.

Limestone:

$CaO + H_2O \rightarrow Ca(OH)_2$ alkaline (base)

Is put on grass as a fertilizer to help grass grow. But, if you put too much on - it burns the grass.

Group III B ⟶ II B transitional element (metals)
- all are metals
- usually good conductors of heat and electricity

Best - Ag 2nd - Cu

Three are considered precious: Ag, Au, Pt. (Note: Ag is used in photography)

Hg is the only metal that is a liquid at room temperature (R.T.) - 25°C.

Hg is used to process seaweed into Na, Cl, and lye.
- is poisonous,
initial reaction - vision impaired, insanity, muscles weaken, blindness, crippledness
final reaction - deaths.

Stories: In Japan during the 1950's at a fishing village, a nearby plastic factory that used mercury in its process dumped remains into the water. It got into the fish and plants. The people ate the fish and there were subsequent deaths, crippledness, and hospitalizations.

The saying "The mad hatter" or "as mad as a hatter" in Alice in Wonderland. Mercury was used in the process of manufacturing felt hats. The people who made these hats were known as "hatters". After continual exposure to the mercury, the hatters went insane. Thus, the saying, "mad as a hatter."

Group IIIA - Boron family

B, Al, Ga, In, Tl

- are not similar to each other except that they have 3e-'s in their outer shell.

B - black solid, unreactive, metalloid

Al - shiny metal
- used to make pots and pans
- reacts with air and tarnishes

Group IVA - Carbon family

C, Si, Ge, Sn, Pb
nonmetal | metalloids | metals

allotropic forms - atoms of an element combine in various forms
ex: C has 3 allotropic forms:
diamond - very strong bonds
graphite - sheets of carbon that slide
charcoal - sheets of carbon made of chunks

Si - grey solid
- 2nd most abundant element on earth's crust.

Sn - tin
- used as a protective covering over steel in cans

Pb - lead
- used in regular gas and batteries

Group VA - Nitrogen Family

N, P, As, Sb, Bi

N_2 - diatomic gas, odorless, colorless.
- very strong bonds $N \equiv N$ triple bond

P - has 3 colors : allotropic forms : white, black, red.
red or white solid P_4 polyatomic molecule.

As - chemically similar to P
poisonous. used in Agatha Christie murder mystery novels
2 allotropic forms : grey metallic and yellow nonmetal (As_4)

Sb - antimony
- black

Story : used to be called stibium. Was used by the Egyptian women as black eyeshadow. Cleopatra.

Story : one day a pig farmer accidently put some stibium in his pigs food. They got very sick then all of a sudden, they gained back their apetite and ate 5 times as much and got very fat. He was glad because this was good for sales. Nearby there was a monistary. The monks were very skinny. The farmer decided to put som stibium in their food. Again like he predicted the monks got sick but instead of gaining back their apetite, all the monks died. Since then, it has been called antimony which means "bad for monks".

Bi - used in Pepto Bismol

Group VIA - Oxygen Family

O, S, Se, Te, Po
nonmetals metalloids

O_2 - diatomic gas
- colorless, odorless, most common form
- supports combustion
- very reactive
- most abundant element on the earths crust.

O_3 - ozone, blue gas, smells.
- corrodes tires
- keeps out sun's harmful rays.

S - yellow solid, stinks like rotten eggs.
S_8 (polyatomic molecule)

Se Te - are toxic

Group VII A – the Halogens

F, Cl (gases), Br (liquid), I, At (solids).

All are diatomic : F_2, Cl_2, Br_2, I_2, At_2

Colors become more intense as you go down the group.

F_2 – pale yellow or yellowish-green
- NaF – prevents tooth decay
- SnF_2 – stannous fluoride

Cl_2 – green
- used in swimming pools, disinfectant

Br_2 – brownish-red
- disinfectant

I_2 – indigo, purplish-black
- used in the hormone thyroxine (controls metabolism)

Group VIII A – Noble Gases – Inert Gases

He, Ne, Ar, Kr, Xe, Rn.

- outer shell is completely filled
  - 8 electrons – called octet
- Sir William Ramsey is given credit for discovering the elements.
- are inert (unreactive)
- used in advertising lights
  - ex: Ne.